What is claimed is:

1. A density control method for an image forming apparatus having a plurality of image forming speeds, comprising:

a first speed setting step of setting an image forming speed at which image formation is carried out by the image forming apparatus to a reference speed;

a first control step of carrying out a maximum density control process at the reference speed in a manner such that image forming conditions are controlled such that a measured density of a first test image corresponding to a maximum density is equal to a predetermined value;

a second control step of carrying out a density gradation control process at the reference speed to determine a conversion table for image signal conversion such that gradation characteristics of a second test image having a plurality of gradations are identical with predetermined characteristics;

a second speed setting step of setting the image forming speed to a first speed other than the reference speed; and

a third control step of carrying out the density gradation control process at the first speed.

2. A density control method for an image forming apparatus according to claim 1, wherein said first

control step is executed in response to at least one of conditions being satisfied, the conditions including an instruction being given from an operator, a predetermined change being detected in environmental conditions, and image formation on a predetermined number of sheet materials being completed.

3. A density control method for an image forming apparatus according to claim 1, comprising an interrupting and restarting step of interrupting an image forming operation being executed, when there occurs a need to carry out the maximum density control process and the density gradation control process during the image forming operation, and restarting the interrupted image forming operation after completion of the density gradation control process carried out at the plurality of image forming speeds of the image forming apparatus.

4. A density control method for an image forming apparatus according to claim 1, wherein the reference speed as the image forming speed is a highest one of the plurality of image forming speeds of the image forming apparatus.

5. An image forming apparatus capable of carrying out an image forming process at a plurality of image forming speeds, comprising:

an image forming device;

a detector that detects a density of an image for

measurement formed by said image forming device;

a first controller that carries out a maximum density control process in a manner such that said image forming device is controlled to form the image for measurement based on image data corresponding to a maximum density and such that the density of the formed image for measurement detected by said detector is equal to a predetermined value; and

a second controller that carries out a density gradation control process to cause said image forming device to form the image for measurement having a plurality of graduations based on image data having a plurality of graduations, and determine a conversion table for image data conversion such that densities of respective gradations of the formed image for measurement detected as the density of the formed image for measurement by said detector exhibit predetermined characteristics;

wherein said first controller carries out the maximum density control process at a reference image forming speed, and said second controller carries out the density gradation control process at each of the plurality of image forming speeds.

6. An image forming apparatus according to claim 5, wherein the maximum density control process is carried out in response to at least one of conditions being satisfied, the conditions including an instruction

being given from an operator, a predetermined change being detected in environmental conditions, and image formation on a predetermined number of sheet materials being completed.

7. An image forming apparatus according to claim 5, comprising an interrupting and restarting controller that interrupts an image forming operation being executed, when there occurs a need to carry out the maximum density control process and the density gradation control process during the image forming operation, and restarts the interrupted image forming operation after completion of the density gradation control process carried out at the plurality of image forming speeds of the image forming apparatus.

8. An image forming apparatus according to claim 5, wherein the reference image forming speed is a highest one of the plurality of image forming speeds of the image forming apparatus.